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the boundaries of high mountain ranges, or of great ocean deeps, it seems most probable that the forces which have produced these very interesting features of the earth's surface are still in active operation.

FARMERS OF FORTY CENTURIES*

A REVIEW

In occidental lands the population grows denser by the growth of villages, towns and cities. Exception has to be made of new, frontier regions, like the Canadian Northwest, where there is a good deal of growth by the taking up of new lands. But new lands are becoming scarce in the world, and manufacturing industry, which is town or village business, has so developed in the last century that in the United States nearly half the people are now living in centers of over 2,500 inhabitants. If all centers be counted, less than 2,500 as well as more, much more than half of us would be found living in them. In Europe the proportion may be still larger. The greater the population density, the more pronounced this preponderance of city life. In our South, 15 to 30 per cent. of the people live in centers of 2,500 or more people, in the southern Great Lake country 50 per cent., and in New England over 75.

Thus is it that in occidental lands population densities of over 250 to the square mile attest manufacturing as a main occupation of the people, and this mainly in cities of considerable size. Europe has some 200,000 square miles of this density, including the ninety largest of its 150 cities of over 100,000 people. This belt of very dense population stretches from the English Midlands to Poland, and is the seat of the continent's greatest manufacturing activity. In China with a population not so much less than Europe's, there is three times as much territory with 250 people to the square mile, yet it contains but twenty-five cities of more than 100,000 people. In the Orient a very dense population is not incompatible with country life, for agriculture is still the preponderant occupation, but it is an agriculture of an intensity unknown with us.

Of this intensity of Oriental farming, and the great density of their population, Professor King knew nothing in 1905. He was interested merely in the long continuity of their farming processes; he had great respect for the knowledge which so-called ignorant farmers in this country had acquired by experience long before it was explained by scientists, and desired to learn what the far longer experience of the East had taught the farmers there, especially in matters of soil management, on which he had long been at work. Thus he was in a receptive mood, but he was "surprised and amazed."

The crowding of the people is intense, hence the motive of high cultivation. An acre of good land (p. 193) is ample to maintain six persons in China and three in the southernmost islands of Japan; that means 3,840 and 1,920 people to

* *Farmers of Forty Centuries or Permanent Agriculture in China, Korea and Japan.* By F. H. King. ix and 441 pp. Maps, ill., index. Mrs. F. H. King, Madison, Wis. 1911. \$2.50. 8 x 6.

the mile, but it makes no allowance for mountain and waste lands, which in Japan make up five-sixths of the territory. The cities, however, have still to be counted in. In their neighborhood the densities will be above the figures given. Extensive areas within the cities of Chicago and New York are less densely settled. In favorable regions in Shantung the country dwellers average 1,536 to the square mile (p. 233). On the largest plain of Japan, that of Tokyo, measuring 2,700 square miles, the average is 2,645 people to the mile (p. 419). King found the overcrowding in Japan visible to the eye (p. 23), the cities with houses, the houses with people or wares, the country with fields and the fields with crops. It is this dense population, through the long period of their occupation of their land, that has taught them that painstaking practice of agriculture which attracted the western scientists.

Their overcrowding has been recently described as condemning the whole people to misery and wretchedness. There is no mention of this view in Professor King's book, but he did not see things so. He found them contented and happy. In Japan strong men and contented, with their faces often wreathed in smiles (p. 19). At Moji, Japan, his steamer was coaled by long lines of men and women with baskets. Aboard the vessel a woman empties them, while her two-year-old baby sways in the sling on her back (p. 42). "The mother looked strong, was apparently accepting her lot as a matter of course, and often, with a smile, turned her face to the child who patted it and played with her ears and hair."

In China, everywhere, the laboring people who were occupied were contented. Idlers or vagrants hardly existed away from the places where tourists encourage them. There can be no doubt that the laboring classes perform a vastly greater aggregate of steady individual toil than with us. Old men and women continue their labors at an age when we should want them spared. Yet all these people exemplify a thrift unknown among us. Servants sent to make a purchase get some equivalent if the price of the article sought is a trifle high and decline to use an American stove as it wastes so much fuel, making too big a fire.

The Chinese at Shanghai were large men, quite equal in frame to large Americans but quite without superfluous flesh, yet few were underfed. Beside the crowding of the people, they have to contend with a heavy burden of taxes. In China it is not unknown for these to be levied a second and even a third time in the same year (p. 331). In Japan the taxes in 1907 amounted to \$2.60 per capita, nearly \$9 per acre of cultivated land, and \$23 for each household in the empire.

The yields secured from the soil are large and by a careful succession of crops the ground is kept at work all the time. A light sandy loam in Manchuria yielded, in a year, first twelve bushels of wheat to the acre, then twenty-one bushels of millet, and later twenty-five bushels of soy beans, all measured to the acre and on the same ground. A gardener near Nagasaki grows three crops of rice, puts \$60 worth of fertilizer on it and gets a return of \$250 per acre. Another Japanese farmer is represented as getting a hundred dollars' worth of crop from less than a tenth of an acre of ground. They crowd their plants as they are crowded. The very hens in Japan number over 800 to the square mile of cultivated land (p. 180), more than twice as numerous as with us.

"The important point regarding these Far East people to which attention should be directed, is that effective thinking, clear and strong, prevails among the farmers who have fed and are still feeding the dense population from the

products of their limited areas" (p. 207). The sympathy and admiration of that paragraph are typical of Professor King's book. It was the farming classes he sought to meet. He could not talk to them. Interpreters were often not to be had, but he made himself known, guiding their plows, watching their processes and exchanging smiles with quickly made friends.

In ever present hot water for making tea—characteristically kept in fireless cookers—he is sure he sees (p. 77) a preventive measure against typhoid fever, almost inevitable in lands of so dense a population. Apparently, the careful analysis of waters in Manchuria by Japanese medical scouts was not purely an adoption of Western science but in part a refinement of instinctive Oriental practices. As "fundamental sanitary practice" he notes the rarity of flies and attributes it to the scrupulous saving of household wastes (pp. 78, 202).

Chinese mechanical appliances are of a high order of efficiency and simplicity. As an instance might be mentioned their foot-driven irrigation pumps, similar to our chain pumps, but with large wooden blades where they have widened members of a chain, working in an open inclined trough instead of a tube. Their merit consists not merely in their ability to lift seven and a half acre feet of water in ten hours for forty-five cents, gold, but also in their simple construction and easy application to field, ditch and ever-ready man-power. Shall we introduce modern power appliances into China? Apparently they have something more efficient. Where can steam compete with stern-wheel boats driven by rows of men treading around an axis, if this apparatus can carry passengers at a fifteenth of a cent a mile? If efficiency and adaptation are criteria, King saw Western machinery outmatched at every turn. Near Sungkiang he saw a railroad bridge built on the ground in a field (p. 299). When it was completed water was turned under it and compelled to make itself a new channel and the old one was filled in. The Japanese simplified their water-lifting apparatus into a mere wheel in the ditch. A man trod the paddles on the water side, making those on the land side lift water to the field (p. 302). On a Chinese river the current did the lifting.

Of road building the Chinese have done little apart from the imperial courier routes. They have taken the more direct course of developing the vehicle. Their wheelbarrow is represented as the most efficient vehicle imaginable for good roads or bad, with a broad tire on a large wheel in the midst of the load, not, as with us, at one end of it. The carrier takes what little strain rests on the handles on a broad shoulder strap and carries four, six or eight passengers at once or an equivalent load of merchandise. An animal may be harnessed or a sail spread to help. Where we have sought the worker's ease while he worked as an end they have set their vision purely on getting the maximum result from the minimum of outlay. Human effort is merely one of the forces they employ. They assume it will continue to be exerted. At Nanking a Chinaman is seen briquetting charcoal powder moistened with syrup waste, adding tiny pinches to a mold and giving repeated blows with a heavy hammer. The principle used is the same utilized here in the most modern hay and cotton presses of repeated small charges (p. 139), giving a much denser bale than is otherwise possible. Always the mechanism is reduced to the lowest possible terms "the principle put to work almost unclothed" (p. 363). So their vertical turbines and horizontal axis wind-mills for pumping salt water about Tientsin (p. 335). Highly scientific incubation of hens' eggs and those of ducks and geese is carried on in China in wicker covered jars containing 1,200 eggs each and the charcoal heater. A

single room visited in Shanghai (?) contained thirty of these incubators. Sterile eggs are quickly detected and put on sale before they have spoiled as food. At the incubators, eggs are bought at six cents for thirteen; seven of the chicks, when ready to feed, for nine cents, almost every family in city or country village buying and keeping a few. The building scaffoldings of lashed poles, allowing adjustment to any height and indefinite reuse are of course familiar in Europe and a result of scarce lumber.

King gives the Chinese nitre-farmer credit for a good understanding of nitrification and suggests that our forbears, who left us such a phrase as "mother of nitre" did not do it without a perception of a vital factor active here even if they had never seen bacteria with a microscope. It is interesting to see a scientist of King's standing so prompt to recognize the science embodied in Oriental farm practice. But he went East prepared to do this. Watching a Chinaman fit soil with a hoe for half an hour, he notes that angle worms abound and admires to see the hoe neither harm a single worm nor leave one uncovered (p. 205). "While we could not talk with him, we were convinced that his action was continually guarded against injury to the worms." He felt that the man acted as if he knew the value of the worms as well as he. He found their farm implements not crude but admirably adapted to their circumstances. Even our plows would be impossible there. Coal shipped in open cars was sprinkled with whitewash, making theft self-revealing; other bulk commodities similarly. The Chinese Wall was not only completely efficient in its day, but its \$520,000,000 of cost very small in comparison with the national defenses of European nations. The steep ridging of the fields makes rain penetrate quickly, letting the air out above that the water may enter below. The effective use of human excreta and garbage in fertilizing, the thoroughness with which it is composted and applied to the soil to balance the heavy drain of the close succession of crops is made very clear in every detail. Great cities in China and Japan need no hydraulic sewerage system. Canton, on the contrary, receives yearly \$31,000 in gold from a contractor for the privilege of removing all house waste. At Kobe, Japan, such waste is sold for from 54 cents to \$1.63 per ton. Japan applied a ton and three quarters to each acre of her fields in 1908. The chemical contents involved are everywhere worked out in detail. Europe and America are estimated to throw into the sea annually the equivalent of over a million tons of phosphate rock.

With us in the West, as has been said, increased population means more of city life and the conditions of city life do not seem satisfactory, for it is there that misery and crime most abound. That this life is attractive to the country dweller is evident from his widespread movement toward the town, perceptible too in the Orient, but in a very much less degree. But there is no note in King's work of such misery in the dense agricultural populations of the East. In studying the future possibilities of population in this country we have been told that we do not propose to consider Chinese conditions. Our progress cityward is evidence of a desire to escape from burdens. In this the mass of the city dwellers have failed utterly. The Chinaman and the Japanese have shown us that heavy burdens may be borne with contentment.

On the whole, it is a remarkable glimpse of the East that we have here. These are real observations of a real observer. They convince the reader of their truth and accuracy. The effect of the fairly wonderful photographs is to strengthen this conviction, though they are often poor as photographs and poorly reproduced. Their contribution to the argument is very great. We have been so

often told that the Chinese mind is sealed to us that it is refreshing to find a most modern and highly trained American without any inkling of their language or civilization at once at home among them on his own ground.

MARK JEFFERSON.

GEOGRAPHICAL RECORD

AMERICAN GEOGRAPHICAL SOCIETY

A regular meeting of the Society was held on April 23, 1912, at 8.30 P. M., at the Engineering Societies' Building, No. 29 West 39th Street. Councillor Levi Holbrook in the Chair. The following persons recommended by the Council were elected to Fellowship:

George A. Armour,	Frank R. Cordley,
C. G. Seymour Bagot,	Ralph Adams Cram,
Thomas H. Barber,	Henry Edward Crampton,
Joshua William Beede,	Thomas DeWitt Cuyler,
Ernest C. Bliss,	H. Stuart Hotchkiss,
Charles Wilson Brown,	Marion Eppley,
Rudolph E. Brünnow,	Mrs. E. L. Reaney,
George Bryce,	Mrs. Edwards Spencer,
C. L. Carpenter,	Otto M. Eidlitz,
Thomas H. Chamberlin,	Hans A. Frasch,
Frederick G. Clapp,	Jacob Hasslacher,
Jane Perry Cook,	W. Thorn Kissel.

The Chairman then introduced Mr. W. S. C. Russell of Springfield, Mass., who addressed the Society on "Iceland." Lantern views were shown.

THE SOCIETY'S HOUSE TO BE CLOSED IN JULY. The Council decided, at its meeting on April 18, to close the Society's building during the month of July. The house will be reopened on Aug. 1.

AMUNDSEN TO RECEIVE THE DALY MEDAL. The Council on April 18 awarded the Charles P. Daly Medal to Captain Roald Amundsen. The medal bears the following inscription:

"Awarded to Roald Amundsen in recognition of the value of his magnetic observations in the American Arctic, achievement of the Northwest Passage, explorations in the Antarctic, and attainment of the South Pole."

The medal will be presented to the explorer at one of the meetings of the Society during his coming visit to this country.

NORTH AMERICA

FAILED TO SCALE MT. MCKINLEY. The expedition to Mt. McKinley which left Fairbanks, Alaska, on Feb. 5, fitted out by a newspaper of that town to make the ascent of Mt. McKinley, returned unsuccessful on April 10. The party says that it attained an elevation of 10,000 feet on the north side of the mountain east of Peter Glacier. Precipitous ice cliffs prevented further progress. These are apparently the same ice cliffs which defeated F. A. Cook's